



# Factors Affecting Pork Consumer Demand During The Covid- 19 Pandemic in Medan City, North Sumatra Province

*Suryadi G<sup>1</sup>, G. A. W. Siregar<sup>1\*</sup>, Yunitas<sup>1</sup>, H Hutauruk<sup>2</sup>*

<sup>1</sup>Animal Husbandry Study Program, Faculty of Agriculture, Universitas Sumatera Utara, Padang Bulan, Medan 2055, Indonesia

<sup>2</sup>Animal Husbandry Department of North Sumatera Province

**Abstract.** At the end of 2019, people in Medan City were shocked by the death of thousands of pigs in several districts in North Sumatera caused by African Swine Fever (ASF). In early March 2020, the government enacted the Large-Scale Social Restrictions (PSBB) policy due to the Covid-19 pandemic. These conditions caused an economic contraction marked by the growth of the national Gross Domestic Product (GDP) which fell sharply in the second quarter of 2020 against the second quarter of 2019 by 5.32% (y-on-y). This study aims to analyze the availability and price of pork and the factors that affect consumer demand for pork during the Covid-19 pandemic in Medan City. The research location consists of six traditional markets in Medan City that sell pork, namely Kanjung Lalang Market, Sunggal Market, Melati Market, Sambu Market, Sambas Market, and Sukaramai Market with purposive sampling method. There were 80 respondents. The data collection methods used were observation, interview, and literature study. The data processing and analysis method used is the Classical Assumption Test and Model Fit Test. The results showed that the total demand for pork before the Covid-19 pandemic was 98 kg while the demand for pork during the Covid-19 pandemic decreased to 40 kg. The decrease in demand for pork is due to the increase in pork prices caused by the outbreak of ASF disease in pigs in North Sumatera. However, the purchasing power of the people of Medan City decreased due to a decrease in income caused by Covid-19. Based on the results of the study, it can be concluded that during the Covid-19 pandemic there was a very drastic decrease in demand for pork with a percentage reaching more than 50%.

**Keyword:** Covid-19, Demand, Pork, Price of pork

Received 16 November | Revised 30 November 2023 | Accepted 30 November 2023

## 1 Introduction

Agriculture is one of the most important sectors in human development and is related to food security [1-3]. [4] mentioned that COVID-2019 is affecting agriculture in two significant aspects: the supply and demand for food. These two aspects are directly related to food security, so food security is also at risk. One type of livestock commonly farmed in North Sumatra is pigs. Pigs are meat-producing monogastric animals which have the ability to convert food ingredients efficiently if supported by the quality of the ration they consume. In addition to the ration, the quality of the breeding stock also determines the productivity efficiency of pigs.

\*Corresponding author at: Animal Husbandry Study Program, Faculty of Agriculture, Universitas Sumatera Utara, Padang Bulan, Medan 2055

E-mail address: galih@usu.ac.id

Pig breeds commonly raised are Landrace, Yorkshire, Berkshire, Duroc, and local. Pigs and their meat are important to some people in Medan City. This is related to the socio-culture of the people of Medan City.

## 2. Materials and Methods

The research was conducted from March to October 2022 in Medan City, North Sumatra Province. The research location consisted of six traditional markets that sell pork in Medan City.

### 2.1. Data types and sources

The types of data used in this study are primary and secondary data. Primary data was obtained from direct interviews with respondents, and secondary data were obtained from related agencies such as Badan Pusat Statistik Kota Medan. The sampling method is determined by purposive sampling. Respondents in this study were people who shopped in one of the traditional markets with the consideration that the consumers who became respondents were not Muslims. Pork traders from the six traditional markets were specifically selected as respondents to find out the difference in the amount of pork demand before and during the Covid-19 pandemic. The total number of pork traders for this survey was 12, while 80 pork consumers were interviewed. To identify the price and demand for pork, the data obtained was analyzed statistically. To determine the price and demand for pork, tabulations were used. Furthermore, it is explained descriptively.

### 2.2. Data analysis

To determine the factors affecting pork demand, the data processing and analysis method used are the Classical Assumption Test and Model Fit Test.

## 3. Results and discussion

The demand for pork in Medan City was assessed from 8 aspects, namely: (1) consumer age, (2) consumer's latest education, (3) culture/customs, (4) pork price, (5) additional expenditure, (6) religious holidays, (7) income change, and (8) number of dependents.

**Table 1.** Difference in Demand for Pork Before and During the Covid-19 Pandemic/ Month

No	Description	Unit	Before Pandemic	During Pandemic
1	Demand total	Kg	98,00	40,00
2	Consumers total	Family	80,00	80,00
3	Demand average	Kg/family/month	1,23	0,50
<b>Total Decline Pork Demand (Kg)</b>				<b>58,00</b>

From Table 2, it can be seen that the total demand for pork before the Covid-19 pandemic was 98 kg while the demand for pork during the Covid-19 pandemic decreased to 40 kg. The decrease in pork demand is due to the increase in pork prices caused by the availability of fewer pigs in North

Sumatra. However, the purchasing power of the people of Medan City decreased due to the decrease in income caused by Covid-19. There are even respondents who experienced termination of employment.

**Table 3.** Multiple Linear Regression Analysis of Factors Affecting the Total Demand for Pork during the Covid-19 Pandemic

	B	Std. Error	Beta	t	Sig
(Constant)	0.199	0.658		0.303	0.763
Age of consumer	-0.004	0.005	-0.107	-0.920	0.361
Last education of consumers	-0.007	0.028	-0.027	-0.248	0.805
Culture/customs	-0.041	0.157	-0.029	-0.262	0.794
Price of pork	0.001	0.002	0.051	0.471	0.639
Additional expenses	0.121	0.264	0.050	0.456	0.649
Religious holidays	0.183	0.070	0.291	2.628	0.011
Change in income	0.066	0.118	0.062	0.560	0.577
Number of consumer dependents	0.122	0.048	0.299	2.537	0.013
R <sup>2</sup>	0,454				
F-calculation	2,303				0,030
F-Table	2,07				$\alpha = 0,05$

#### *Age of Consumer*

**Table 4.** Age of pork consumer respondents in Medan City

NoAge (Year)	Total (Soul)	Percentage (%)
1 <20	1	1,25
220-40	56	70
341-60		1923,75
4 >60		4 5
<b>Total</b>	<b>80</b>	<b>100,00</b>

From Table 4, it can be seen that the highest number of respondents aged between 20-40 years, totaling 56 people with a percentage of 70%. Pork consumers are dominated by people of productive age. This is related to the level of taste and income of the community. Meanwhile, respondents under 20 years old are the least age group, with a total of 1 person and a percentage of 1.25%. Then followed by respondents aged 41-60 years, totaling 19 people with a percentage of 23.75%, while respondents aged over 60 years only numbered 5 people with a percentage of 5%.

#### *Last Education of Consumers*

From Table 5, it can be seen that there are no consumers who are respondents in this study with elementary, fourth, and doctoral education. The lowest number of consumers is consumers with D1 and master graduates with a total of 1 person and a percentage of 1.25%. Meanwhile, consumers with the highest level of education are bachelor with a total of 42 people and a

percentage reaching 52.50%. This is due to the level of public awareness of meeting the needs of good quality animal protein.

**Table 5.** Education level of pork consumer respondents in Medan City

No	Last Education (Year)	Total (Soul)	Percentage (%)
1	Elementary School	25	0 0
2	Junior High School		22,50
3	Senior High School		31,25
4	D1		11,25
5	D3		911,25
6	D4		0 0
7	Bachelor		4252,50
8	Master		11,25
9	Doctoral		0 0
<b>Total</b>		<b>80</b>	<b>100,00</b>

### ***Culture/ Customs***

The tribes or ethnicities in Medan City are Malay, Karo, Batak, Chinese, Javanese, Minangkabau, Nias, Aceh. The majority of the population in Medan City are Batak, Chinese, Karo, and Javanese. Pork is always served at traditional ceremonies in the Batak, Nias, and Chinese tribes, such as wedding parties or consolation if a family member dies. Karo wedding ceremonies are also often served processed pork. Karo restaurants such as BPK (Karo Roast Pork) and Chinese restaurants such as dumpling noodles are also very much found in Medan City. The price offered is relatively more expensive when compared to other processed protein sources such as processed beef.

### ***Price of pork***

According to [5] consumer decisions are made only on the basis of a few criteria. Instead of comparing more characteristics, a consumer decides according to price criteria (he/she issues from the presumption that a higher price means also a higher quality). Before the Covid-19 pandemic, the lowest price of pork per kilogram was IDR 50,000 and the highest price of pork per kilogram was only IDR 110,000. Before the Covid-19 pandemic in Medan City, the increase in pork prices was due to several holidays that caused high demand for pork. During the Covid-19 pandemic, the lowest price of pork reached IDR 120,000 and then during holidays such as Christmas, New Year, and Chinese New Year, the price of pork increased to IDR 200,000 per kilogram. The calculated value corresponds with the theory of demand, which declares that the relationship between the demanded amount and price is inverse, and the own price elasticity should be negative. It can be also stated that the demand on pork is price-inelastic [6-9].

### ***Additional Expenses***

During the Covid-19 pandemic, respondents had additional expenses incurred to buy vitamins, masks, and hand sanitizers. These needs are needed to prevent the spread of the Covid-19 virus. The price of vitamins consumed by respondents, masks and hand sanitizers used by respondents varies so that the amount of expenditure is different from one respondent to another. Based on

interviews conducted with respondents, the smallest additional expenditure was Rp 20,000 per month while the largest additional expenditure reached Rp 180,000 per month.

### ***Religious Holidays***

Based on interviews conducted with pork traders in traditional markets and respondents who are shopping, it is known that the demand for pork during religious holidays tends to be high. Religious holidays that affect the demand for pork are Christmas, Chinese New Year, and New Year. The price of pork on the eve of these holidays also increases. Although the price of pork increases, demand also increases due to the fact that many people gather with their extended families during the holidays. For some people in Medan City, pork is considered as a must-serve food on holidays. Based on the analysis conducted, the religious holiday variable partially has a significant effect on the amount of pork demand.

### ***Change in Income***

Based on interviews conducted with 80 respondents, 55 respondents experienced a decrease in income, 24 respondents experienced no change in income, and one respondent experienced an increase in income. Per capita income greatly affects the demand for pork because the price of pork is relatively high for some people in Medan City. The decrease in respondents' income was caused by a reduction in basic salary by the company where the respondents work and a decrease in sales for respondents who work as entrepreneurs due to the Covid-19 pandemic. In order to deal with the lack of money, households from the lower income levels reduce their expenditures for foodstuffs more often than those from the higher income levels [10]. Of the 80 respondents obtained, the largest number of respondents' occupations were self-employed with 34 people and a percentage of 42.50%. Then followed by housewives with 21 people and a percentage of 26.25%. Other respondents' occupations consisted of entrepreneurs, students, laborers, advocates, honorary teachers, state-owned enterprises, civil servants, church staff, pastors, dentists retired teachers, and freelance.

### ***Number of Consumer Dependents***

Based on interviews conducted with respondents, it is known that dependents consist of younger siblings or relatives who are in school or college. The greater the number of dependents owned, the more consumers will consider consuming pork. The Covid-19 pandemic has greatly affected people in making decisions in meeting food needs because of the uncertain economic situation, people tend to meet the needs of relatively cheap animal protein. However, if pork consumers have a small number of dependents or even none, then consumers will not make many considerations. Based on the analysis conducted, the variable number of consumer dependents partially has a significant effect on the amount of pork demand.

## **4. Conclusion**

The demand for pork during the Covid-19 pandemic decreased drastically compared to before the Covid-19 pandemic, while the price of pork increased drastically compared to before the Covid-19 pandemic. Factors affecting pork demand during the Covid-19 pandemic are consumer age,

consumer's latest education, culture/customs, pork price, additional expenditure, religious holidays, change in income, and number of dependents. Based on the multiple linear regression analysis conducted, it was found that the variables of religious holidays and the number of consumer dependents partially had a significant effect on the demand for pork, while the other variables had no significant effect partially. However, simultaneously, the variables of consumer age, consumer's latest education, culture/customs, pork price, additional expenditure, religious holidays, change in income, and number of dependents significantly affect the demand for pork during the Covid-19 pandemic in Medan City, North Sumatra.

## REFERENCES

- [1] Abdelhedi, I.T.; Zouari, S.Z. 2020. Agriculture and Food Security in North Africa: a Theoretical and Empirical Approach. *Journal of the Knowledge Economy* (in press)
- [2] Kogo, B.K.; Kumar, L.; Koech, R. 2020. Climate change and variability in Kenya: a review of impacts on agriculture and food security *Environment, Development and Sustainability* (in press)
- [3] Lopez-Ridaura, S.; Barba-Escoto, L.; Reyna, C.; Hellin, J.; Gerard, B.; van Wijk, M. 2019. Food security and agriculture in the Western Highlands of Guatemala. *Food Security* 11(4): 817-833.
- [4] FAO – Food and Agriculture Organization. 2020a. Q&A: COVID-19 pandemic – impact on food and agriculture. Available in: <http://www.fao.org/2019-ncov/q-and-a/en/>
- [5] Stávková J., Stejskal L., Toufarová Z. (2008): Factors influencing consumer behaviour. *Agricultural Economics – Czech*, 54 (7): 276–284.
- [6] Tomek W.G., Robinson K.L. (1991): *Agricultural Product Prices*. Cornell University Press, Ithaca, New York.
- [7] Bielik P. (2006): *Business economics* (in Slovak). SPU, Nitra; ISBN 80-8069-698-5.
- [8] Zentková I. (2002): Agricultural transformation in the connection with agrocommodities markets development (in Slovak). In: *Proceedings of international scientific papers – ISD 2002*. SPU, Nitra; ISBN 80-8069-031-6.
- [9] Janda K. (1994): The Estimation of a Linear Demand System for Basic Types of Meat. Available at [http://www.cerge-ei.cz/publications/older\\_working\\_paper/](http://www.cerge-ei.cz/publications/older_working_paper/)
- [10] Melicharová A. (2006): Decision-making process of households on food consumption. *Agricultural Economics – Czech*, 52 (7): 328–334.